Rapid Application Development With WebObjects

Session 609

Rapid Application Development With WebObjects

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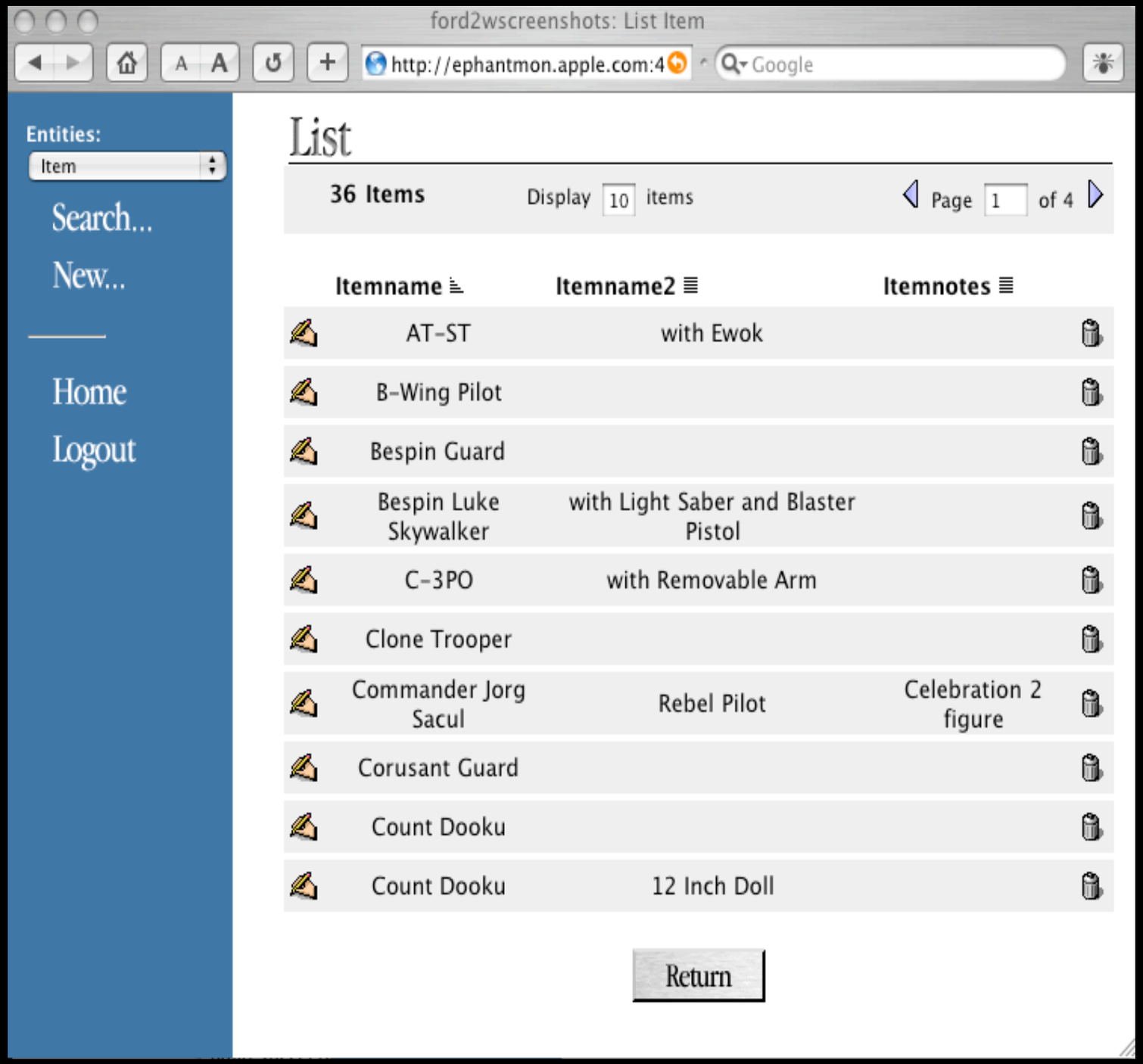

ford2wscreenshots: List Item
http://ephantmon.apple.com:4
Google
Entities:
Item
Search...
New...
Home
Logout
List
36 Items
Display 10 items
Page 1 of 4
Itemname
Itemname2
Itemnotes
AT-ST
with Ewok
B-Wing Pilot
Bespin Guard
Bespin Luke Skywalker
with Light Saber and Blaster Pistol
C-3PO
with Removable Arm
Clone Trooper
Commander Jorg Sacul
Rebel Pilot
Celebration 2 figure
Corusant Guard
Count Dooku
Count Dooku
12 Inch Doll
Return

What You'll Learn

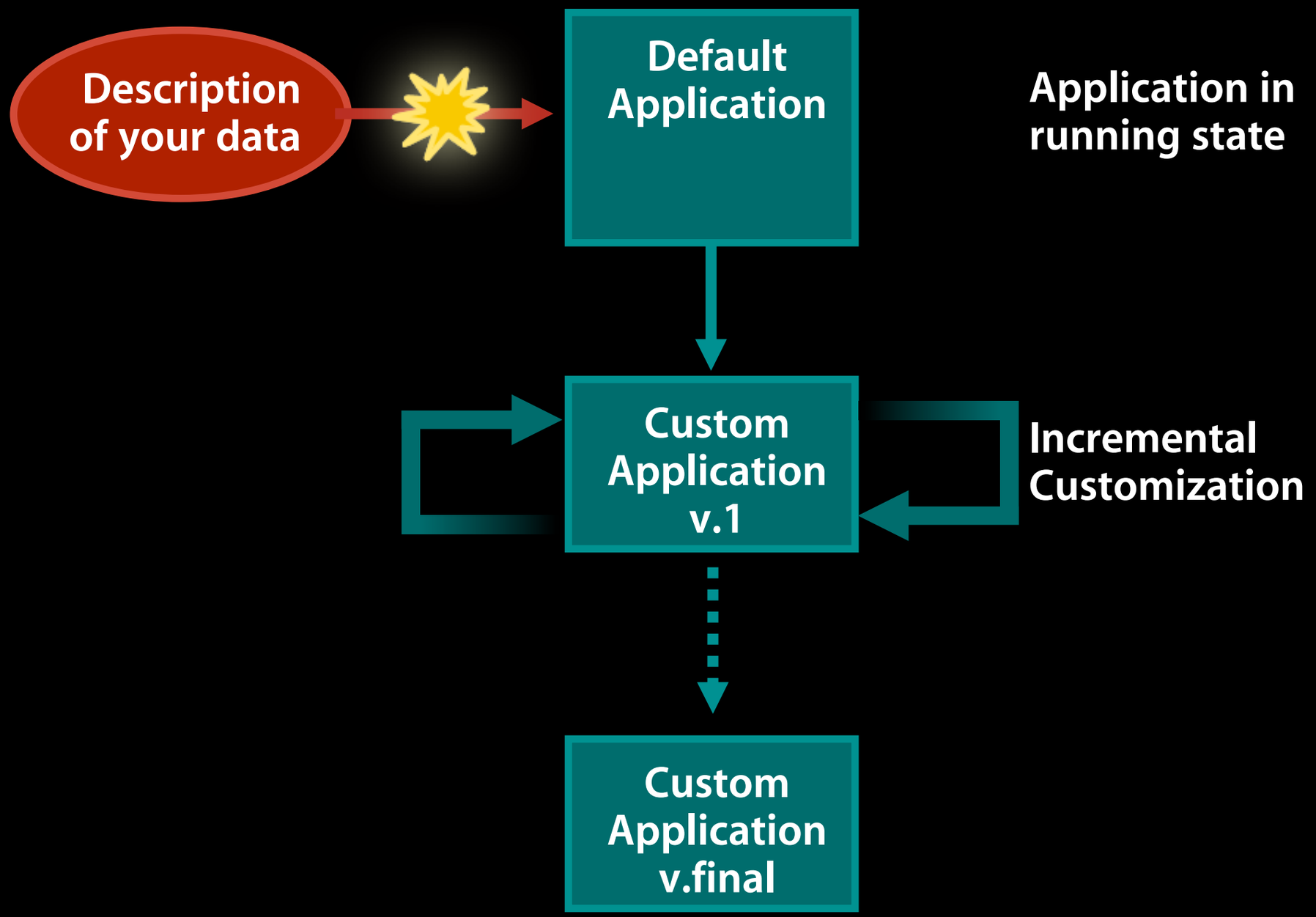
- How to build WebObjects applications in minutes
- Incremental customization to get production apps
- Dynamic method of application development
  - Data Driven
  - Rule Drive
  - Also uses traditional WebObjects techniques

Rapid Development = Direct To *

Application Type	WebObjects	Java Client	WebServices
Client	HTML	Swing	WebServices API
Direct To ...	Direct To Web (D2W)	Direct To JavaClient (D2JC)	Direct To Web Services (D2WS)

What Is “Rapid Development”?

- Tools and frameworks to help you build applications faster
- Prebuilt functionality and default application behavior
- Taking advantage of a data model to write less code
- Common process used for HTML, Swing, Web services applications


Description of your data
Default Application
Application in running state
Custom Application v.1
Incremental Customization
Custom Application v.final

Data Model

- Common denominator
- Assumptions
  - Data can be expressed in ER form
  - Common operations you want to perform:
    - insert/delete
    - search/list
    - edit fields
    - edit relationships

Database to Object Mapping

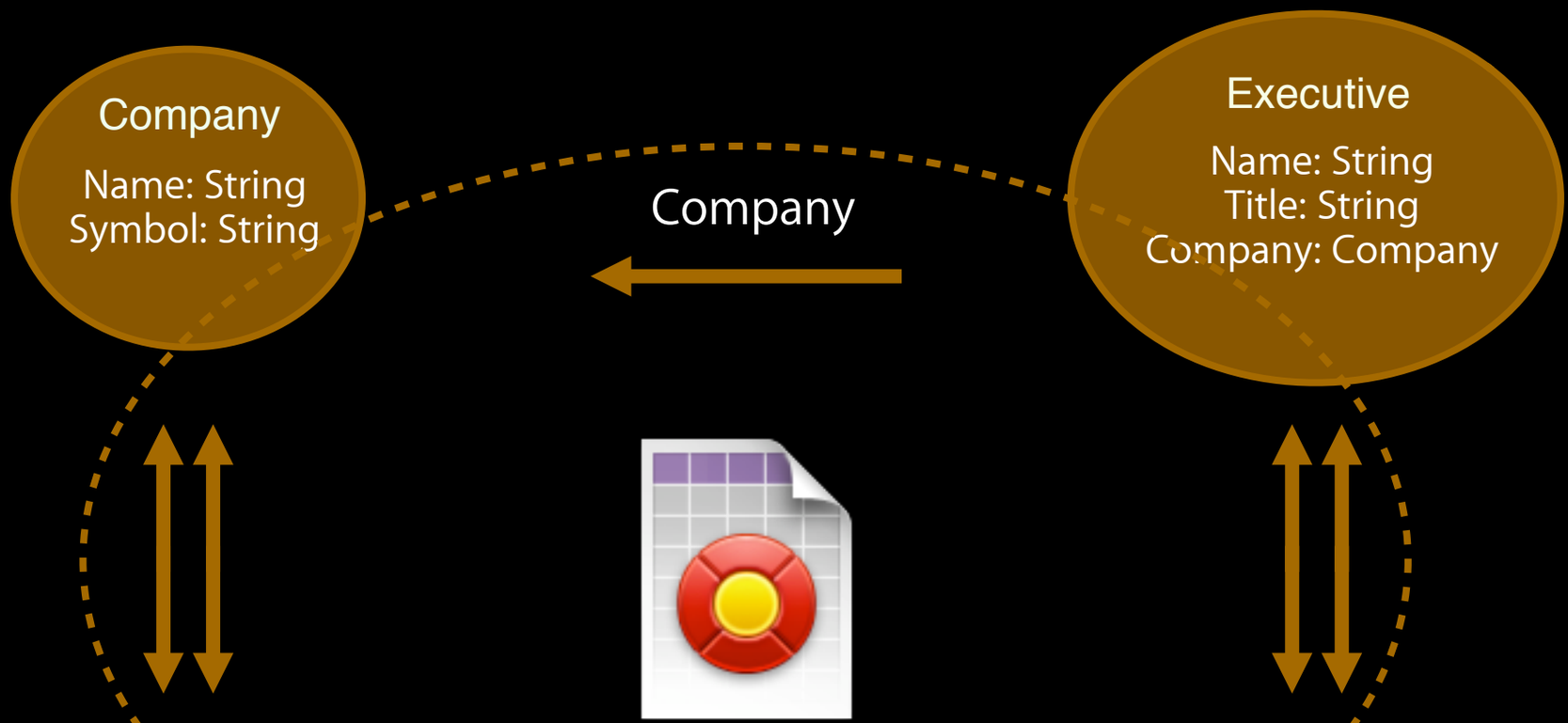


TABLE (Companies)		
Key	Name	Sym
1	Apple	APPL
2	Oracle	ORCL
3	Sun	SUNW
4	foo	XYZ

TABLE (Executives)			
Key	Name	Title	Comp
1	S Jobs	CEO	1
2	Avie	VP SW	1
3	Larry	CEO	2
4	foo	XYZ	

Example Data Set

My Star Wars Collection

My Model

- ITEM
- CHARACTER Han, R2D2, Luke, X-Wing
- CATEGORY Humanoid, Alien, Ship
- MOVIE Episode 2, Jedi, Empire Strikes Back
- TOY LINE Power of The Force, Saga, Action Fleet

Demo: Basic D2W

Direct to Web

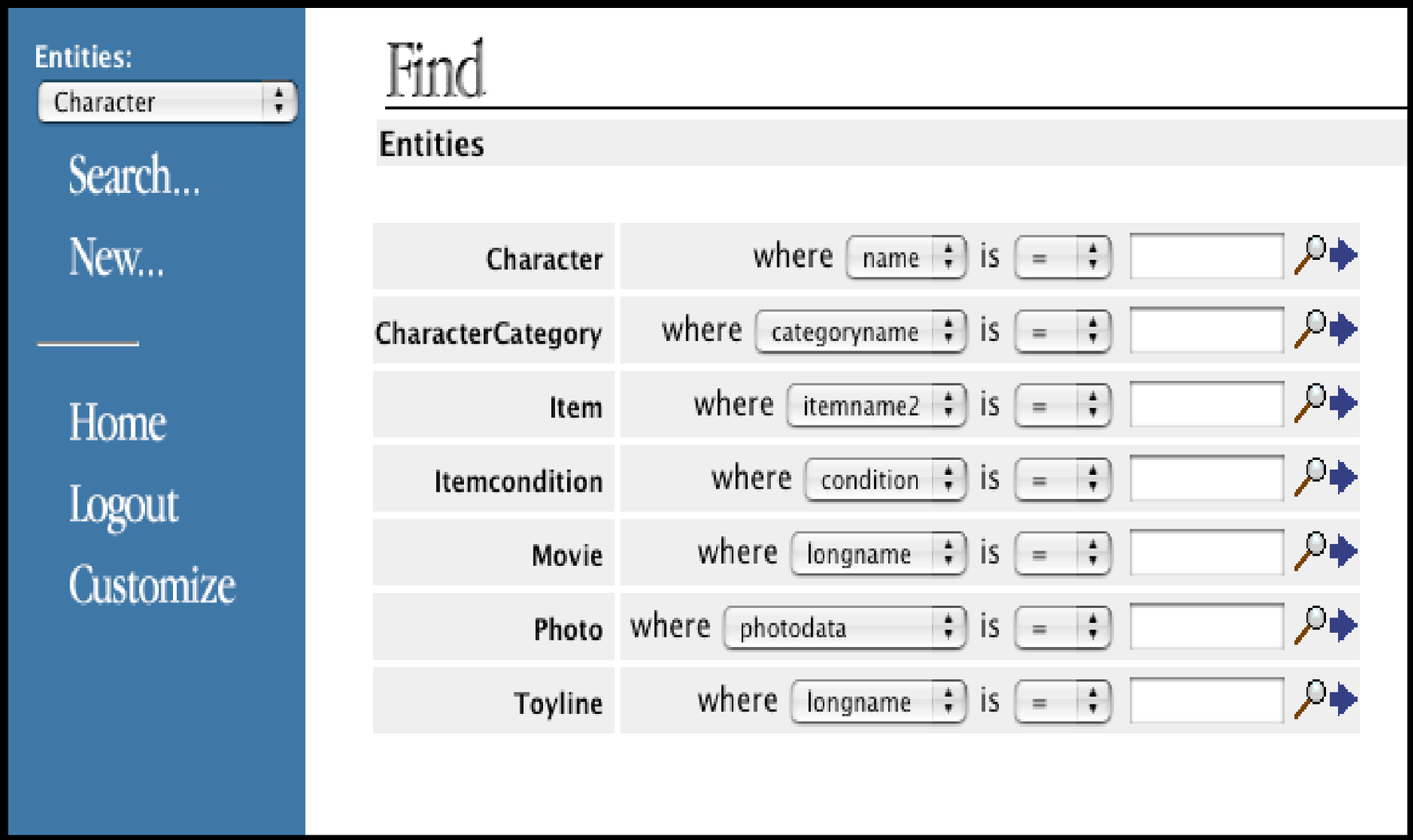
- A quick way of creating HTML WO applications
- Prebuilt Page Templates
- Data and Rule driven
- D2W Apps can be customized in many ways

D2W Page Templates

- Prebuilt dynamic versions of common pages
  - Search, List, Edit Select, Edit Relationship

D2W Page Templates

- Search Page

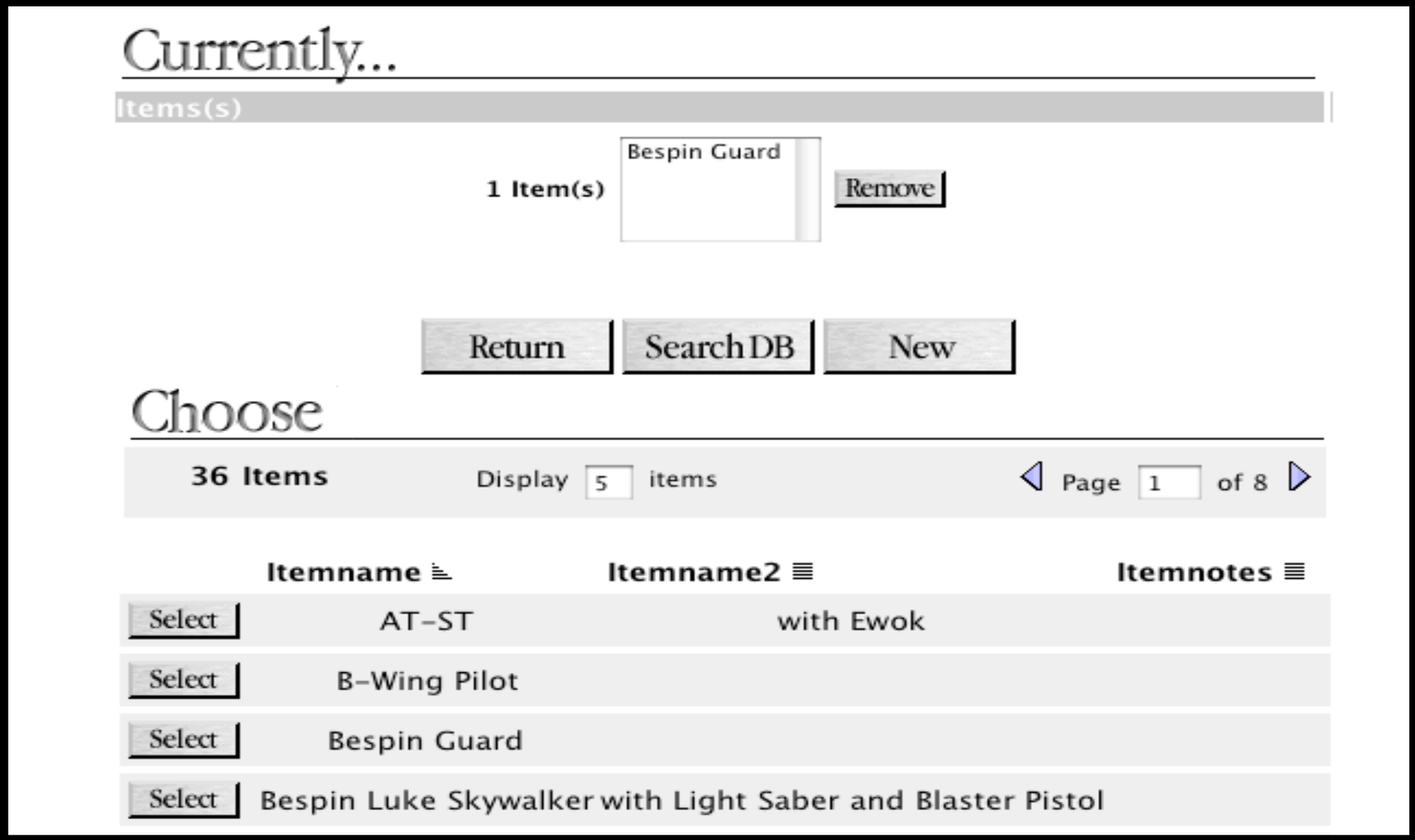


D2W Page Templates

- List Page

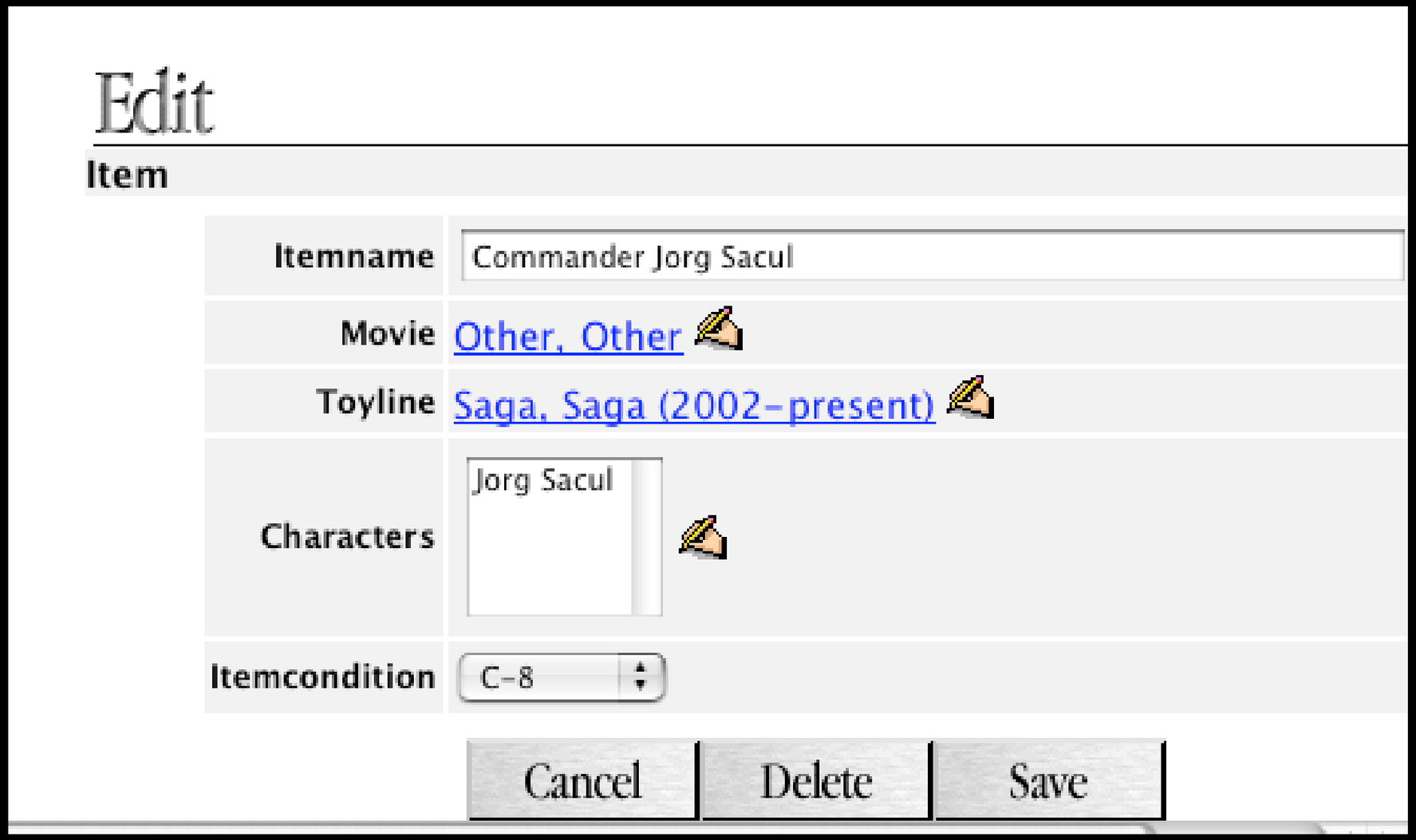
D2W Page Templates

- Edit Relationship page



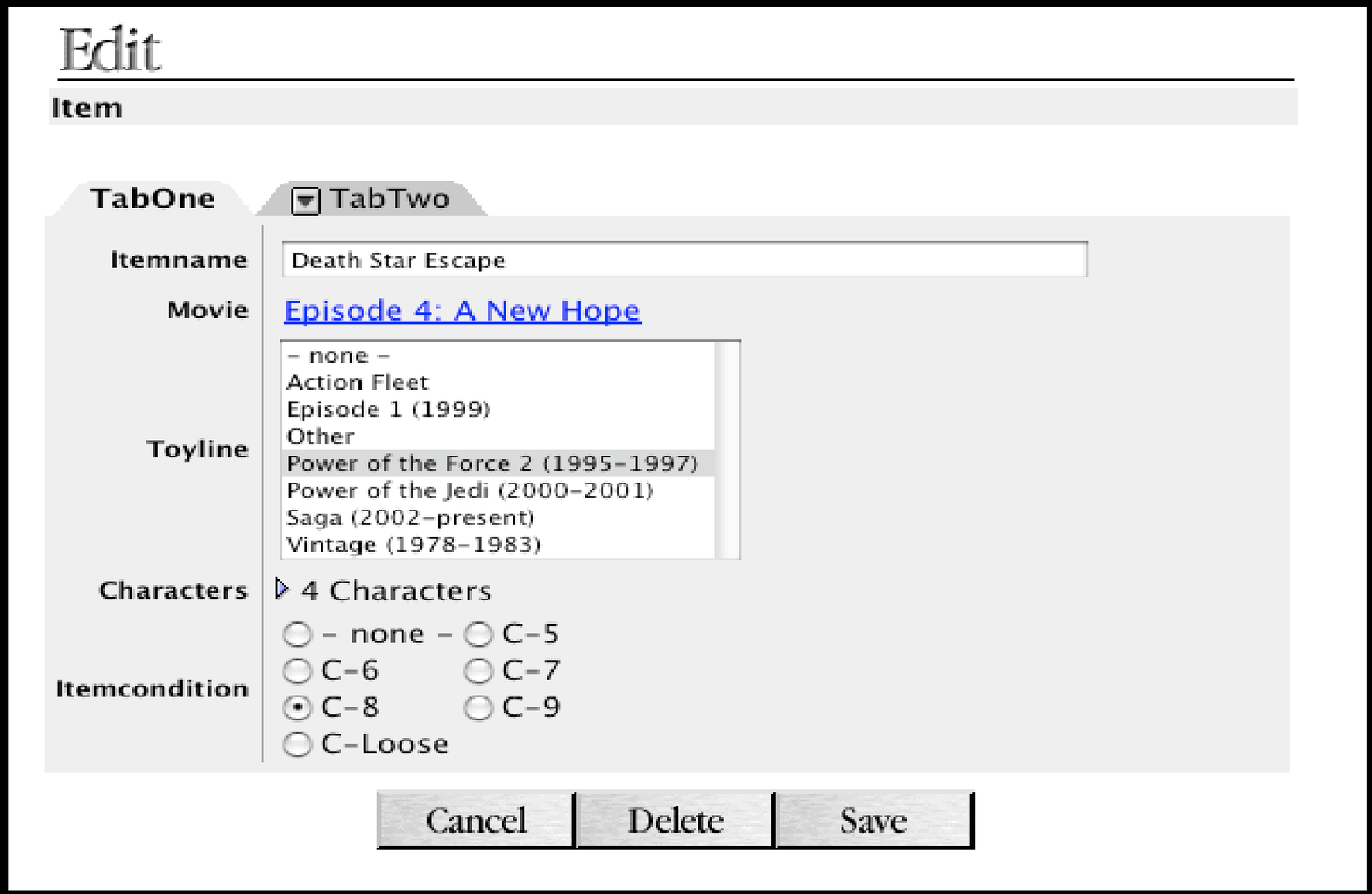
D2W Page Templates

- Edit Page



D2W Page Templates

- More…



What Is the “Rule System”?

- Basic “Expert System” for deriving values at runtime
  - Give it current state (context)
  - Ask for a value
- Searches a rule collection to derive values (recursive)
- Used by all 3 types of Rapid Development apps

A Rule

- If (Condition is true) then (Value applies)
- Condition - Left Hand Side (LHS)

  (Task = ‘List’ and Entity = ‘Movie’)
- Value - Right Hand Side (RHS)

  displayFields = (longname, shortname)

What Fields Should be Listed?

A Rule System Example

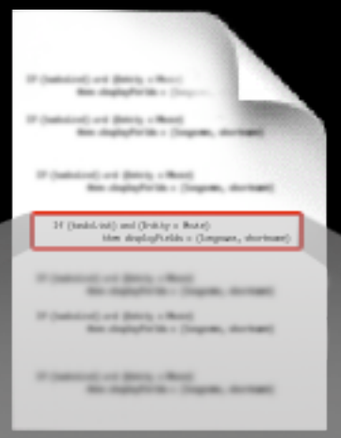
D2W Context

Task = List
Entity = Movie

Rule System

displayFields ?

displayFields = (longname, shortname)



```
If (task=List) and (Entity = Movie)
        then displayFields = (longname, shortname)
```

D2W Assistant

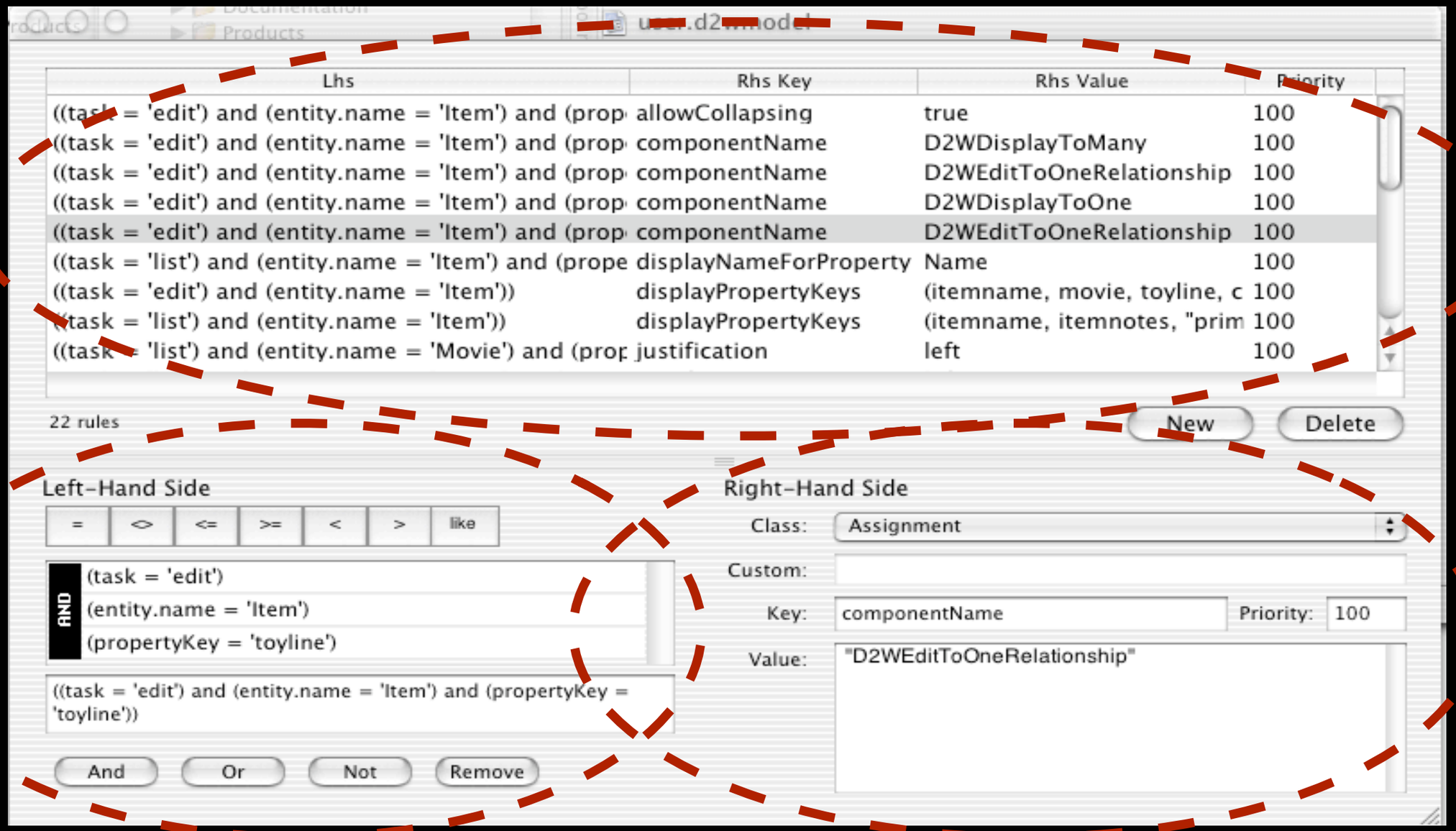
- Applet that runs alongside your app
- Indirect modification of rules
- Easy configuration of pages
  - Show/hide entities and properties
  - Indicate what page variation to use for task
  - Indicate html widget to use for properties
- Changes happen immediately

D2W Assistant

Rule Editor

- Desktop application
- Direct editing of Rules
- Left-Hand-Side (LHS)
  - Qualifier that indicates when to apply rule
- Right-Hand-Side (RHS)
  - Value that's derived if rule is "fired"
- Rules stored in user.d2wmodel

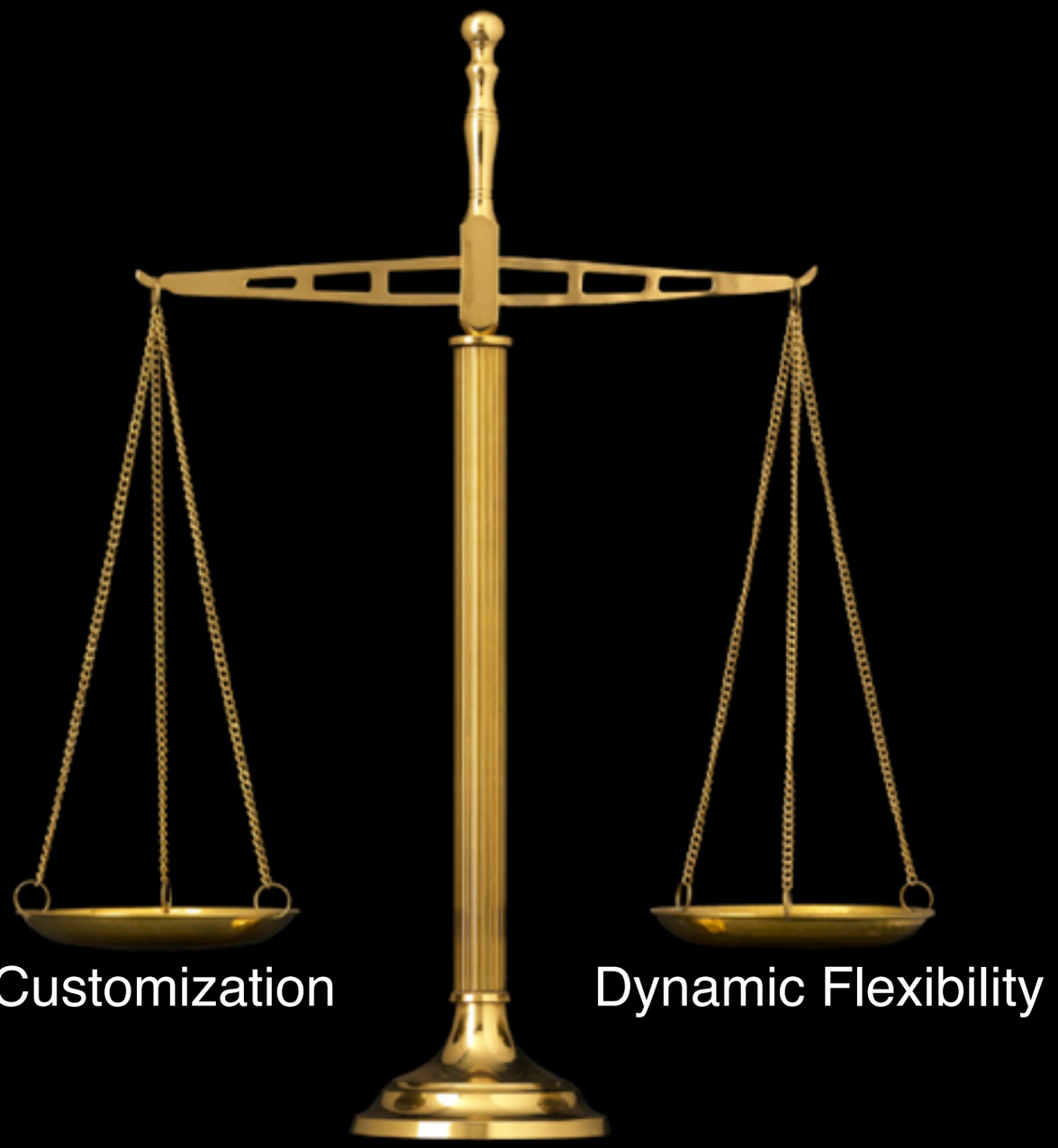
Rule Editor


Products
Lhs
Rhs Key
Rhs Value
Priority
((task = 'edit') and (entity.name = 'Item') and (prop
allowCollapsing
true
100
((task = 'edit') and (entity.name = 'Item') and (prop
componentName
D2WDisplayToMany
100
((task = 'edit') and (entity.name = 'Item') and (prop
componentName
D2WEditToOneRelationship
100
((task = 'edit') and (entity.name = 'Item') and (prop
componentName
D2WDisplayToOne
100
((task = 'edit') and (entity.name = 'Item') and (prop
componentName
D2WEditToOneRelationship
100
((task = 'list') and (entity.name = 'Item') and (prope
displayNameForProperty
Name
100
((task = 'edit') and (entity.name = 'Item'))
displayPropertyKeys
(itemname, movie, toyline, c
100
((task = 'list') and (entity.name = 'Item'))
displayPropertyKeys
(itemname, itemnotes, "prim
100
((task = 'list') and (entity.name = 'Movie') and (prop
justification
left
100
22 rules
New
Delete
Left-Hand Side
=
<>
<=
>=
<
>
like
AND
(task = 'edit')
(entity.name = 'Item')
(propertyKey = 'toyline')
((task = 'edit') and (entity.name = 'Item') and (propertyKey = 'toyline'))
And
Or
Not
Remove
Right-Hand Side
Class:
Assignment
Custom:
Key:
componentName
Priority:
100
Value:
"D2WEditToOneRelationship"

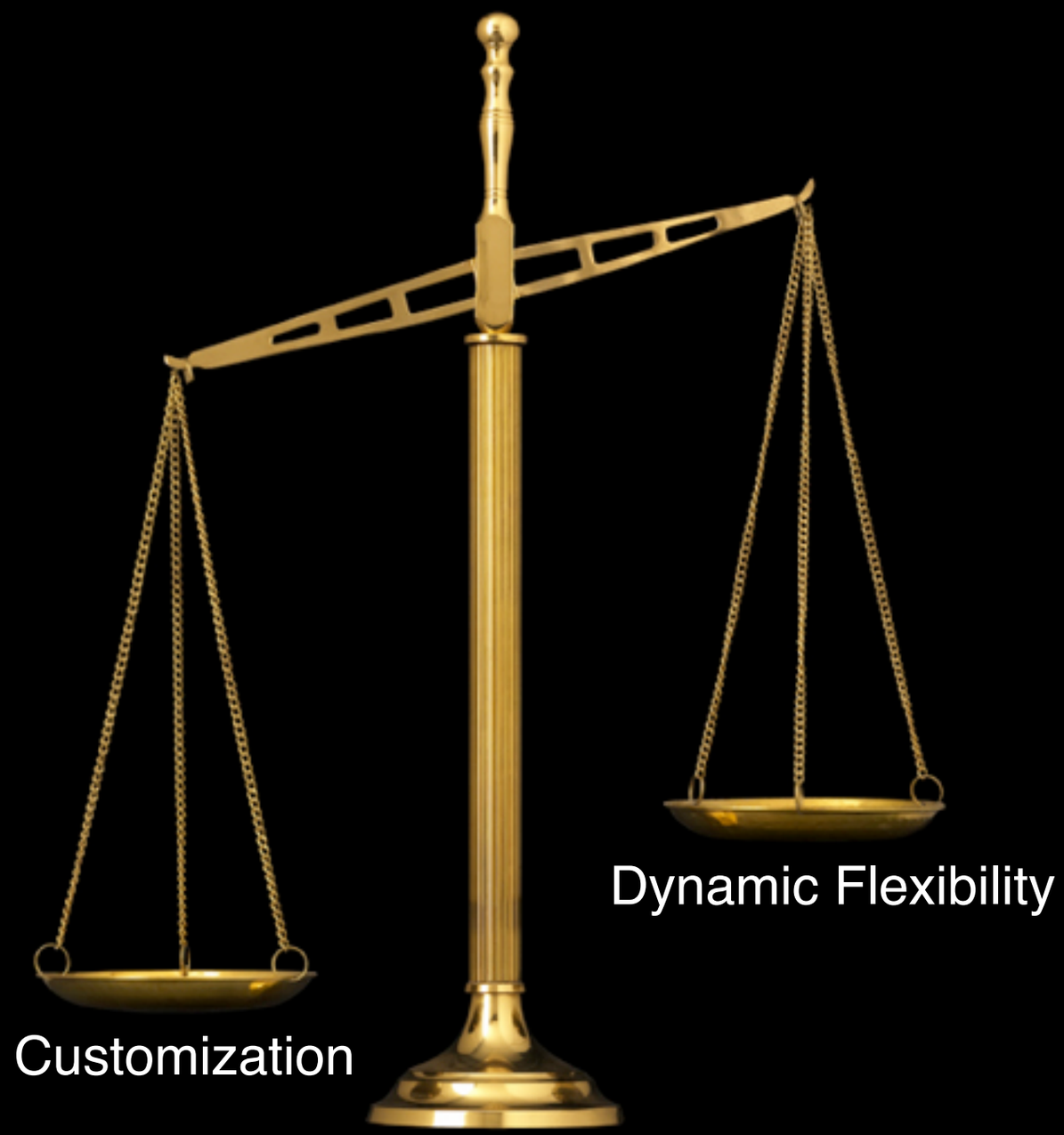
Customizing Your D2W App

- Page templates customize “on-the-fly” with info from
  - Your data model
  - Default rules
- Can add custom rules to configure further
- Allow inserting using custom widgets
- Allow access to HTML and Java, but less dynamic

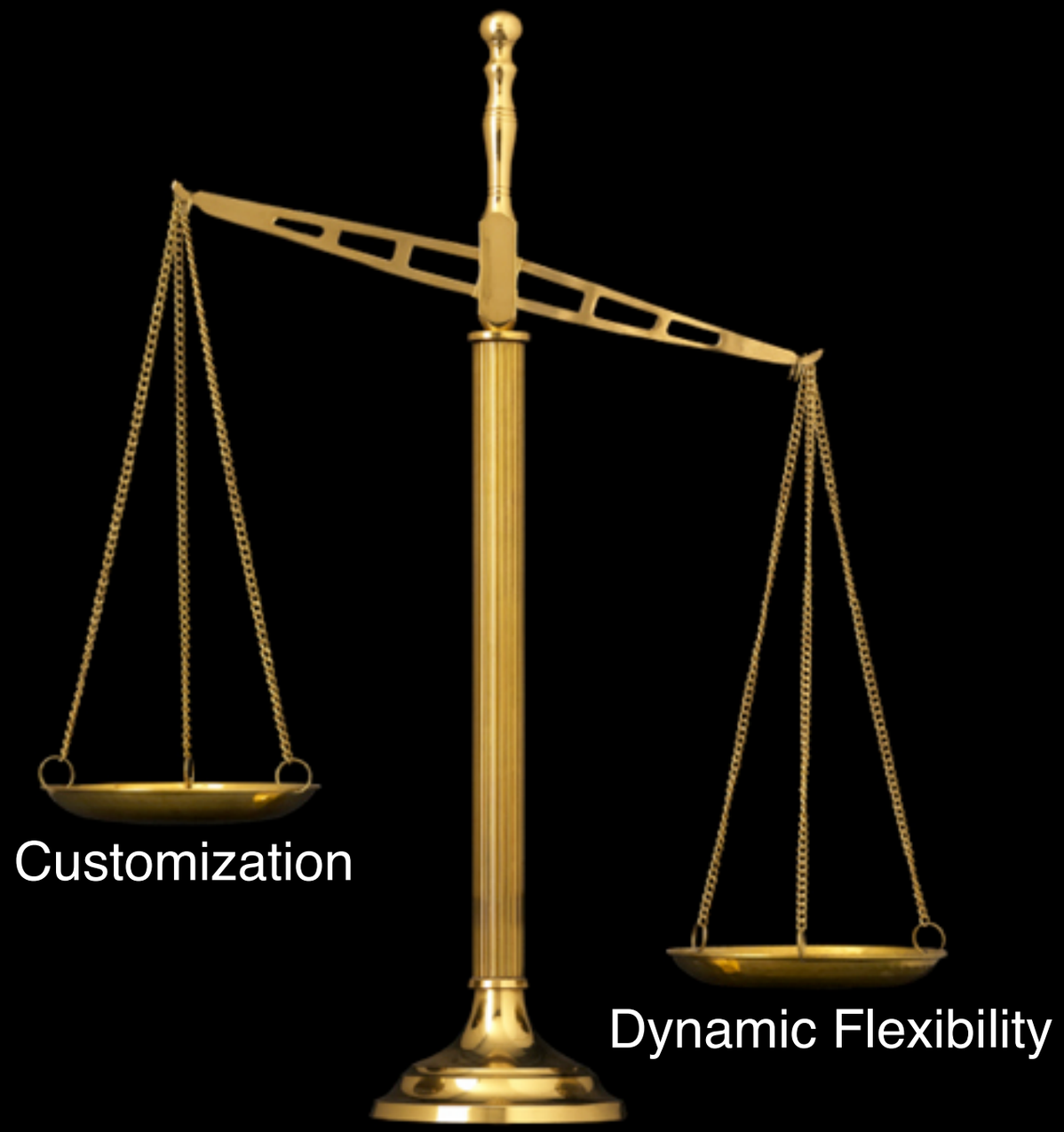
Be Aware of the Costs



Be Aware of the Costs

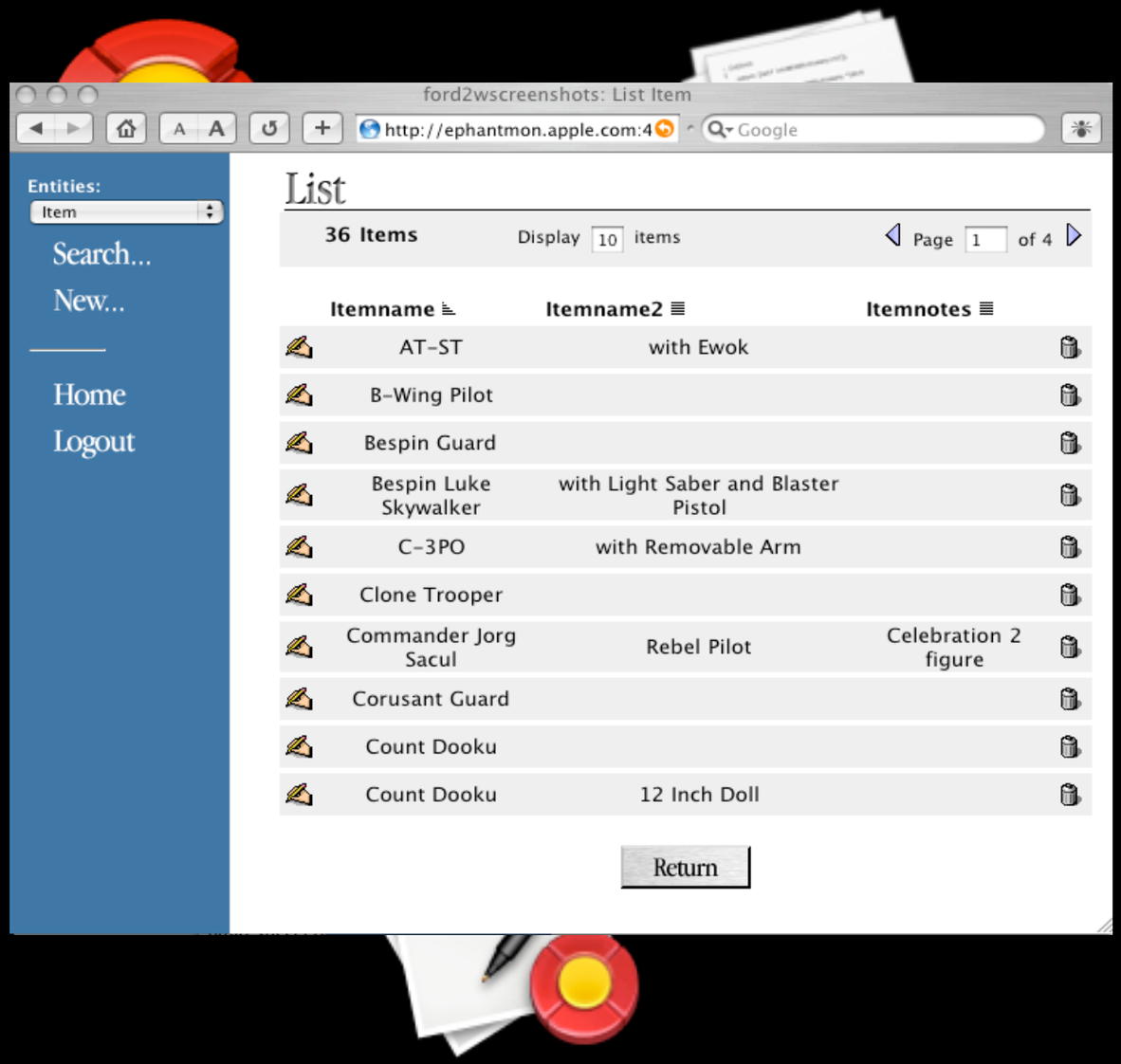


Be Aware of the Costs

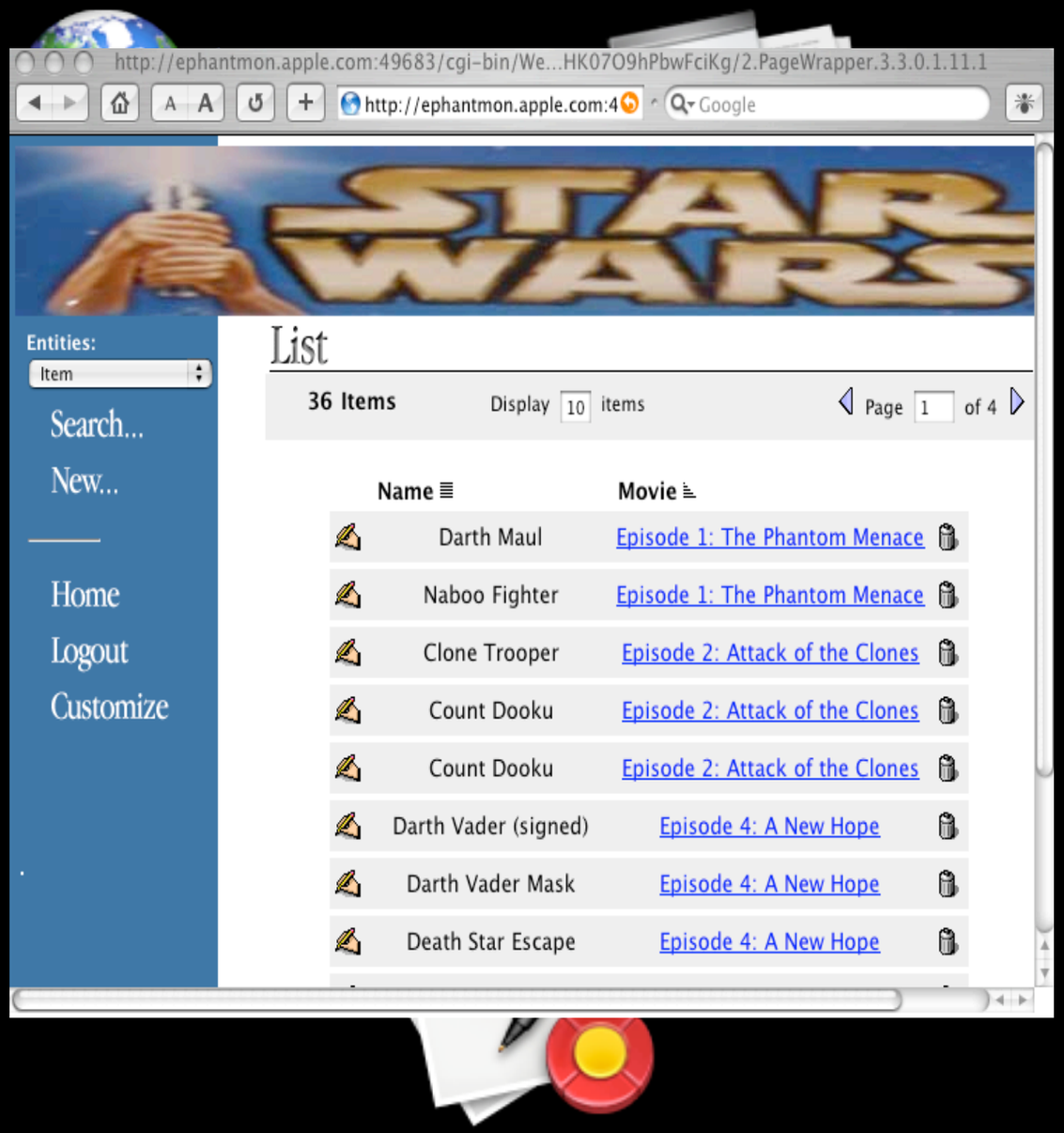


The D2W Process

Initial Application

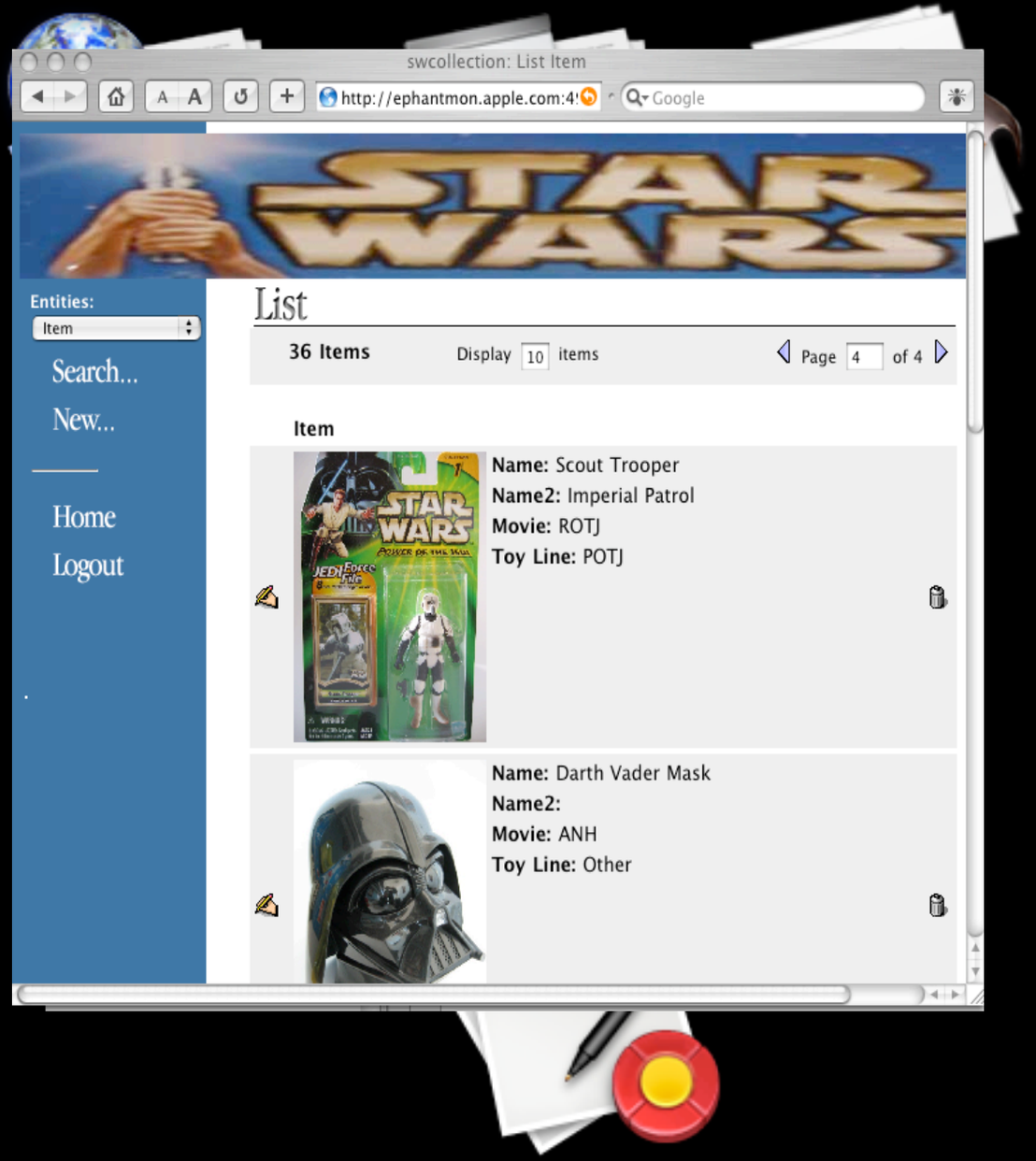


- Create initial EOModel
- Default app
  - functional
  - zero code



Basic Customization

- Use Direct to Web Assistant
- Write custom rules in Rule Editor
- Refine EOModel
- Basic HTML changes



Advanced Customization

- Write custom components
- Write advanced rules
- Get full access to HTML/ Java of pages

Demo: Advanced D2W

Direct To Java Client

Brent Shank
Webobjects Documentation Writer
webobjects@apple.com

Query Window

New Open Delete Find Append Clear

Character | Item

Character Name:

Category: Deselect

Character Name	Category Name
AT-ST	Vehicle
B-Wing Pilot	Humanoid
Bespin Guard	Humanoid
C3PO	Droid
Chewbacca	Alien
Clone Trooper	Humanoid
Corusant Guard	Humanoid
Count Dooku	Humanoid
Darth Maul	Humanoid
Darth Vader	Humanoid
Ephant Mon	Alien
Han Solo	Humanoid
Jorg Sacul	Humanoid
Leia Organa	Humanoid
Lobot	Humanoid

1 of 24 selected

What Is Java Client?

- Distributed applications +
- Three-tier +
- Database access through Enterprise Objects +
- Swing desktop application clients

Multiplatform EOF Applications!

- Middle tier accesses the database using EOF
- Middle tier controls all access to data source
- Full WebObjects session support
- Double-clickable application or Java Web Start

Direct to Java Client

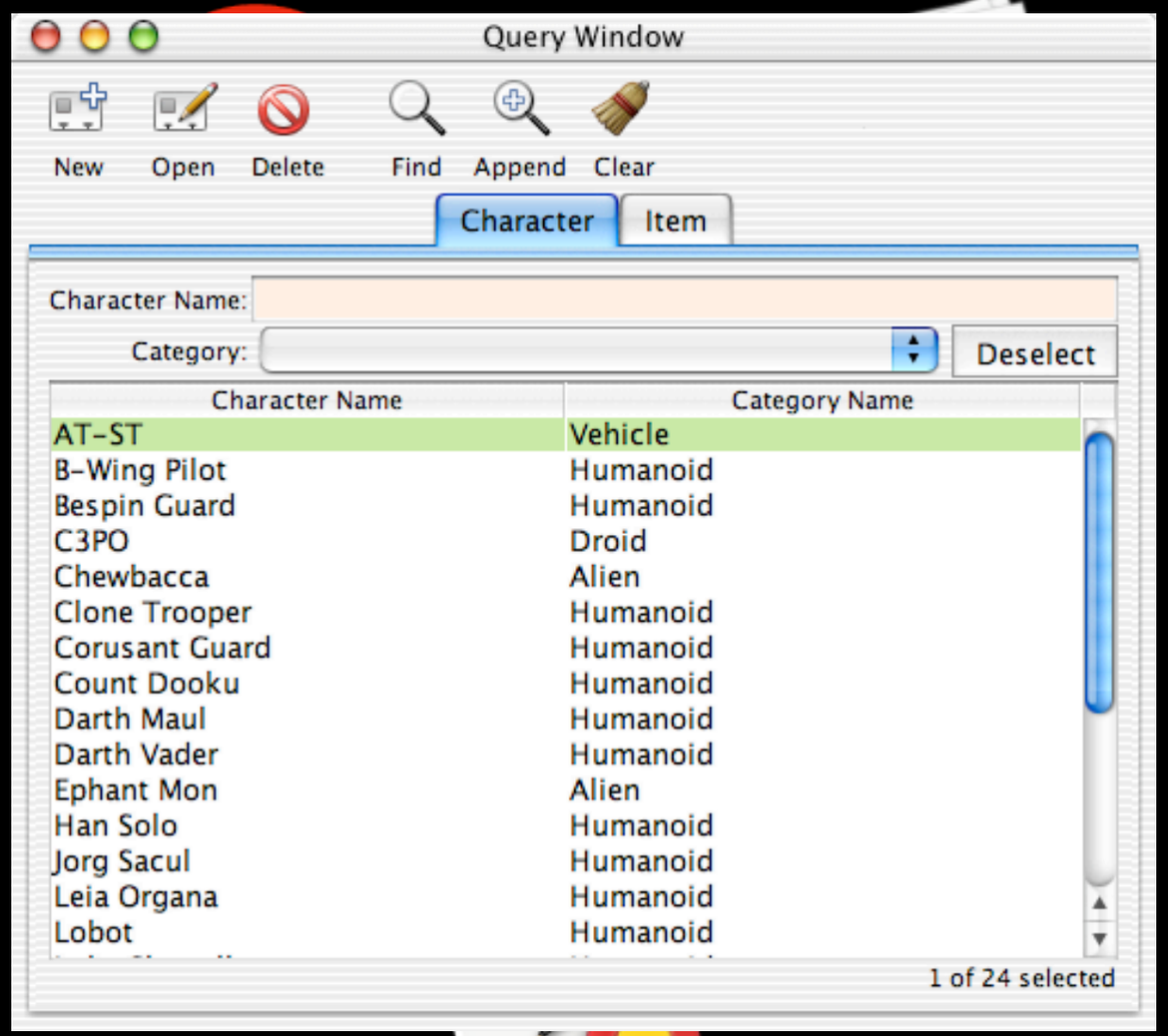
- A quick way to create Swing desktop applications
- Data and rule driven
- Uses prebuilt controllers to generate Swing
- Relies on rule system to generate user interface
- Multiple application tasks
- Many customization techniques

Change Development Focus

- Focus on business logic, not on writing laborious user interface code
- Working prototypes in hours (or minutes!)
- Present to client and continue to iterate until complete
- Mostly-functional applications through the development cycle (not just at the end!)

The D2JC Process

Initial Application



- Create initial EOModel
- Default app
  - functional
  - zero code

Basic Customization

- Use Direct to Java Client Assistant
- Write your own rules in Rule Editor
- Refine EOModel

Advanced Customization

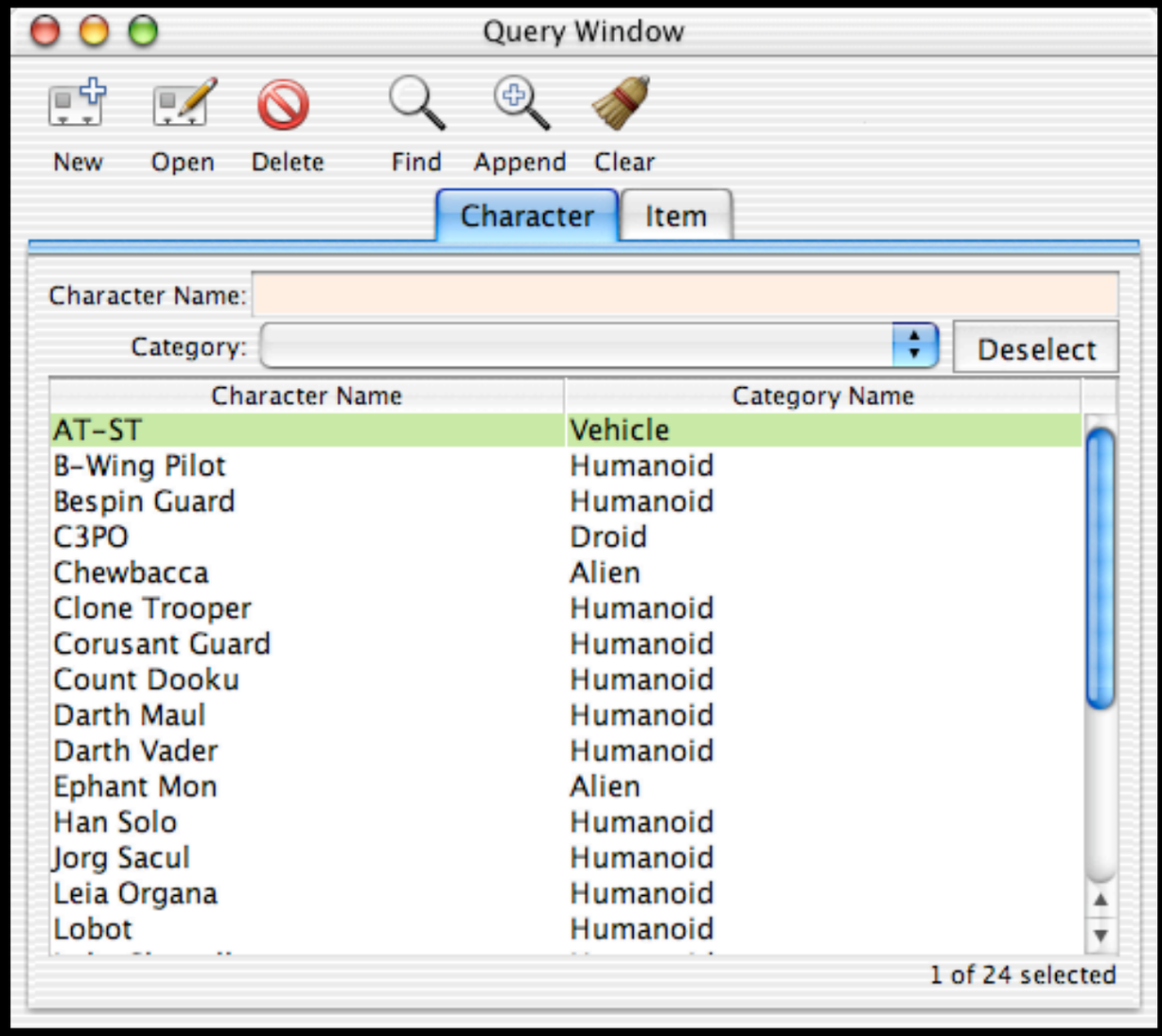
- Write/extend controller classes
- Build and use nibs
- Write custom assignment classes

D2JC Mechanics: Controllers

- Analogous to WOComponents
- Implement client functionality
- Glue between UI and data
- Create and layout UI based on EOModel
- Different types of controllers:
  - Application
  - User interface
  - Entity-level
  - Property-level

Controller Hierarchy

```
<Window>
  <Action Buttons/>
    <Tab View Area>
      <Tab View>
        <Text Field/>
        <Pop-up Menu/>
        <Table View>
          <Table Column>
            <Text Field>
          </Table Column>
          <Table Column>
            <Text Field>
          </Table Column>
        </Table View>
      </Tab View>
    </Tab View Area>
</Window>
```



Data Flow

Application

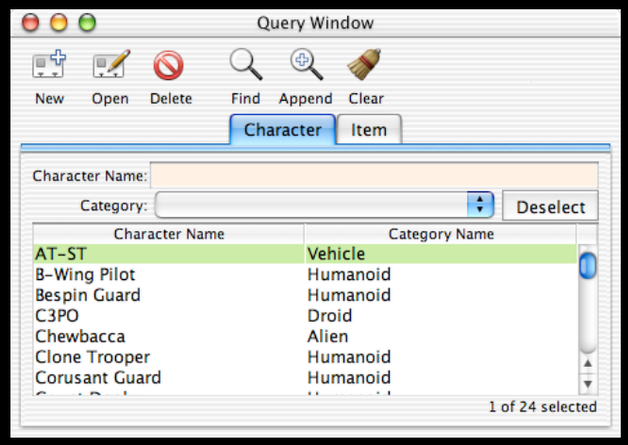
Controller Factory

Controller

Controller

Controller

Controller



Rule System Requests

XML

XML Descriptions

Client

Server

Rule System

WebObjects
Enterprise Objects

Rule Models

Data Models

Customization Techniques

- Use Assistant
- Write custom rules
- Extend controller classes
- Freeze XML
- Use nib files built in Interface Builder
- Use controller factory
- Write controller classes

Demo: Advanced D2JC

Direct To Web Services

- Web Services : RPCs for the XML era
- D2WS: Infrastructure to create WO/WS applications quickly
- Similar Rapid Development Process
  - Start with Model
  - Get default app
  - Customize
- 612—Creating Web Services

Summary

	HTML	Swing	Web Services
EOModeler	MODEL		
Project Builder	D2W App	D2JC App	D2WS App
Assistant	D2W Assistant	D2JC Assistant	D2WS Assistant
Customize	HTML pages and components	Controllers, nibs, XML	WebService definitions
Result	Custom Application with dynamic flexibility		

Roadmap

614 WebObjects
Reusable Components
Creating reusable compoments in WebObjects

Russian Hill
Wed., 3:30pm

616 WebObjects EOF–
Advanced Topics
In-depth exploration of Enterprise Objects

Russian Hill
Wed., 5:00pm

624 WebObjects–
Creating Web Services
Direct To Web Services

Nob Hill
Fri., 3:30pm

Who to Contact

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(800) 630 2775

http://developer.apple.com/wwdc2003/urls.html

For More Information

Reference Library

Documentation

Using EOModeler
ADC Home > Documentation > WebObjects >

Developing WebObjects Applications With Direct to Web
ADC Home > Documentation > WebObjects >

Java Client Desktop Applications
ADC Home > Documentation > WebObjects >

Web Services
ADC Home > Documentation > WebObjects >

Reference Library

Resources

Product Information

http://www.apple.com/webobjects

Developer Support

http://developer.apple.com/webobjects

Enterprise-Level WebObjects Support And Consulting

http://www.apple.com/services/technicalsupport

http://www.apple.com/services/consulting

Mailing List

WebObjects Announcements

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Q&A

WebObjects Team

webobjects@apple.com

http://developer.apple.com/wwdc2003/urls.html

WWDC 2003

Worldwide Developers Conference